

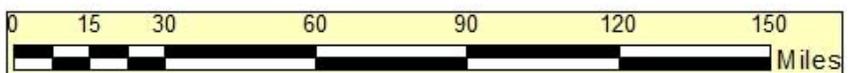
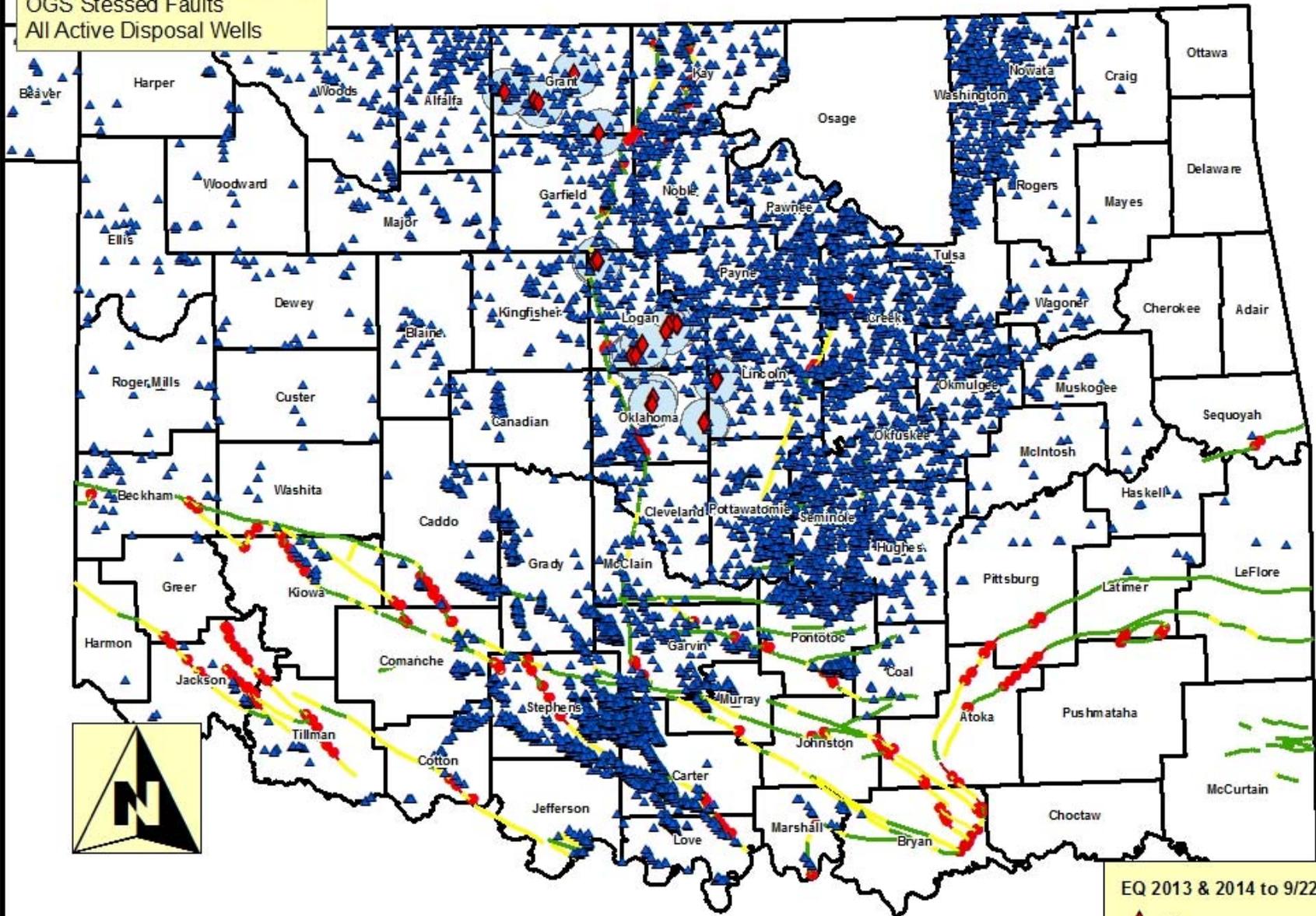


# Oklahoma Corporation Commission

Oil and Gas Conservation Division

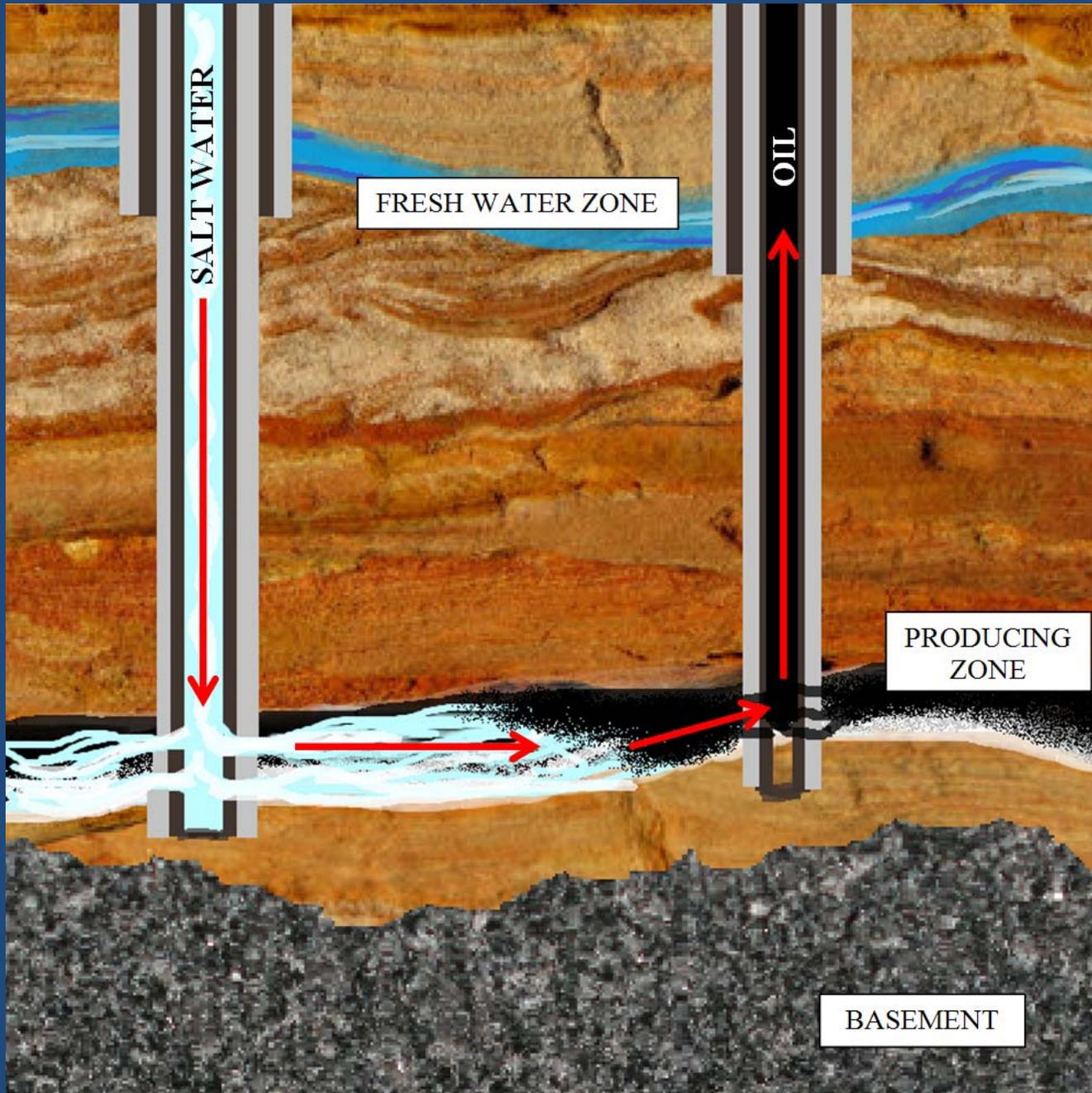
Tim Baker, Director

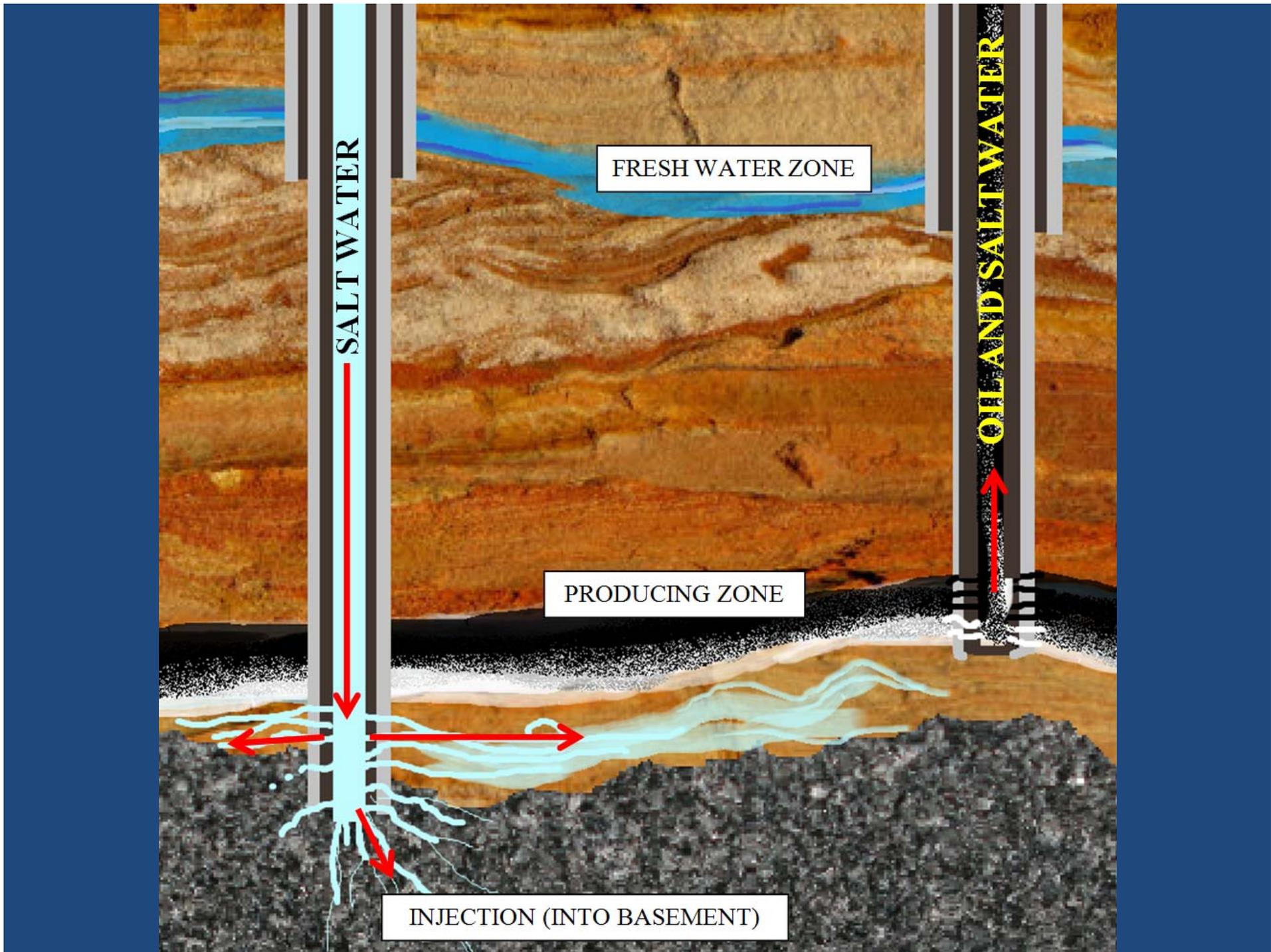
6 Mile Buffer, Area of Concern  
OGS Stessed Faults  
All Active Disposal Wells

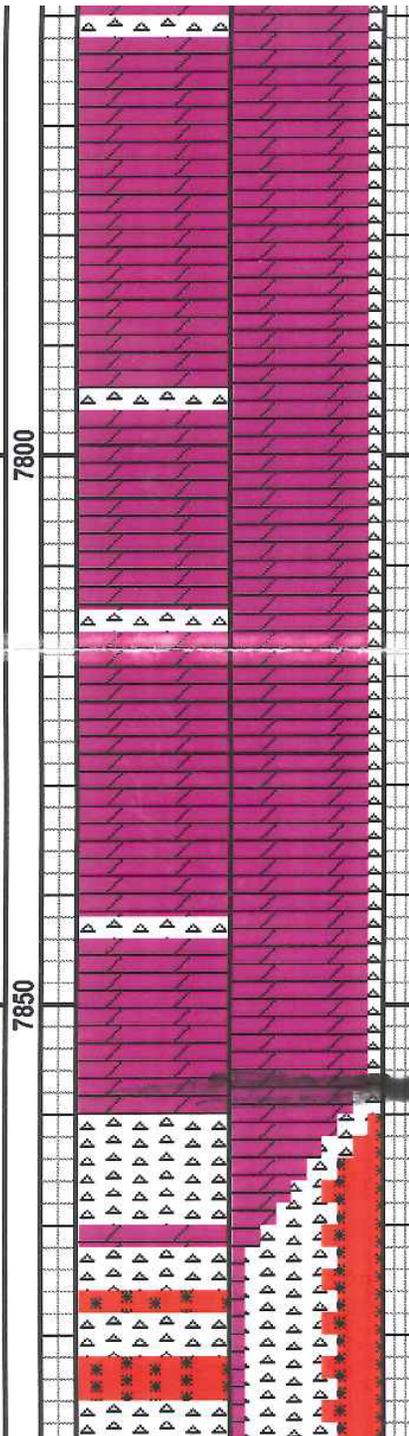
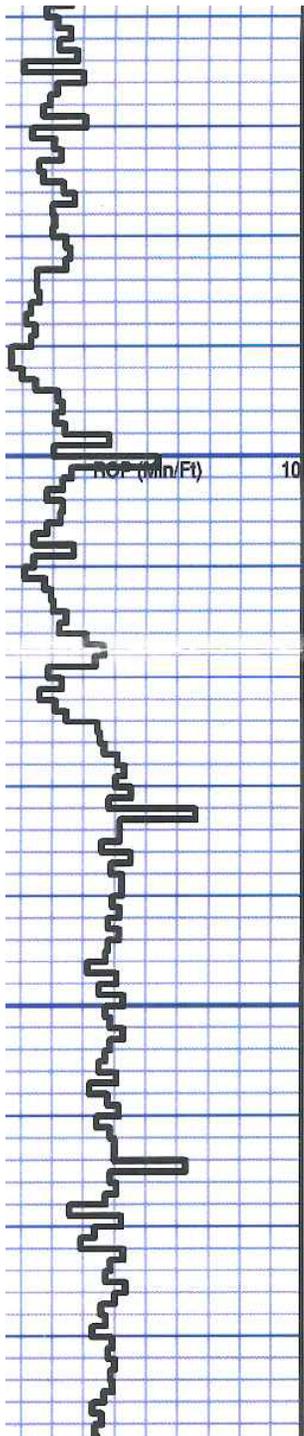


EQ 2013 & 2014 to 9/22/2014

- ◆ m4
- M4\_6Mbuffer\_2013\_9-21-2014
- ▲ All Active Class II Wells 9-22-2014







90% DOL; OFF WH, MED TO FINE XLN, SUCROSIC, SOFT TO BRITTLE, YLW FLUOR, 10% CHRT

90% DOL; OFF WH, MED TO FINE XLN, SUCROSIC, SOFT TO BRITTLE, YLW FLUOR, 10% CHRT

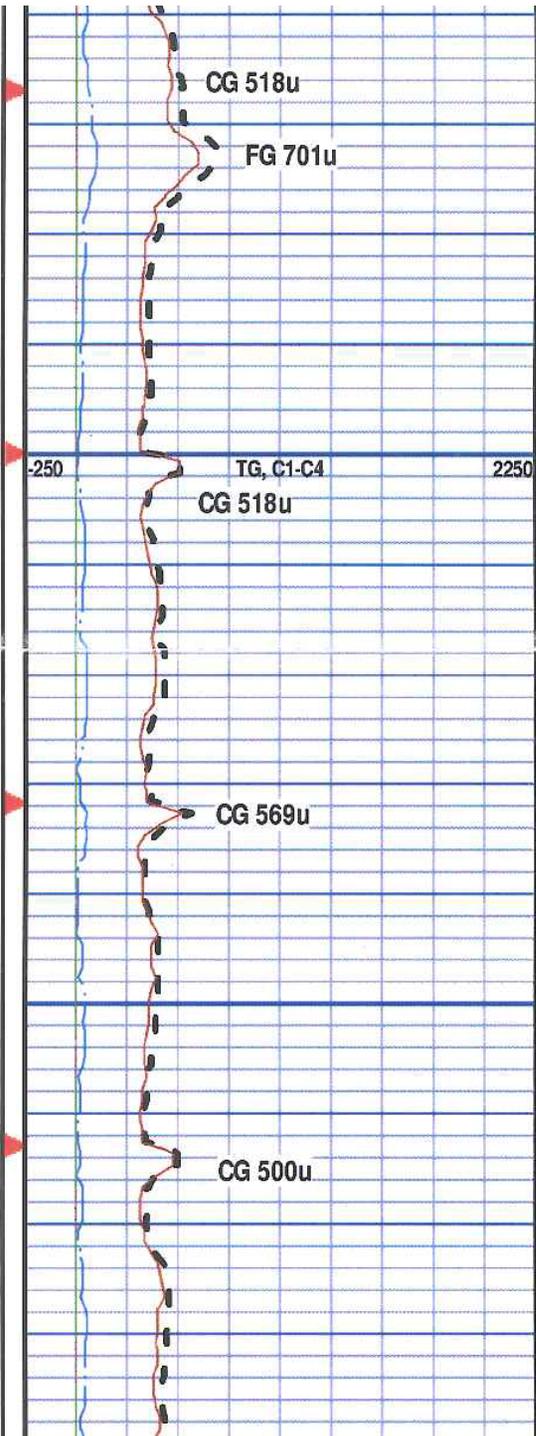
90% DOL; OFF WH, MED TO FINE XLN, SUCROSIC, SOFT TO BRITTLE, YLW FLUOR, 10% CHRT

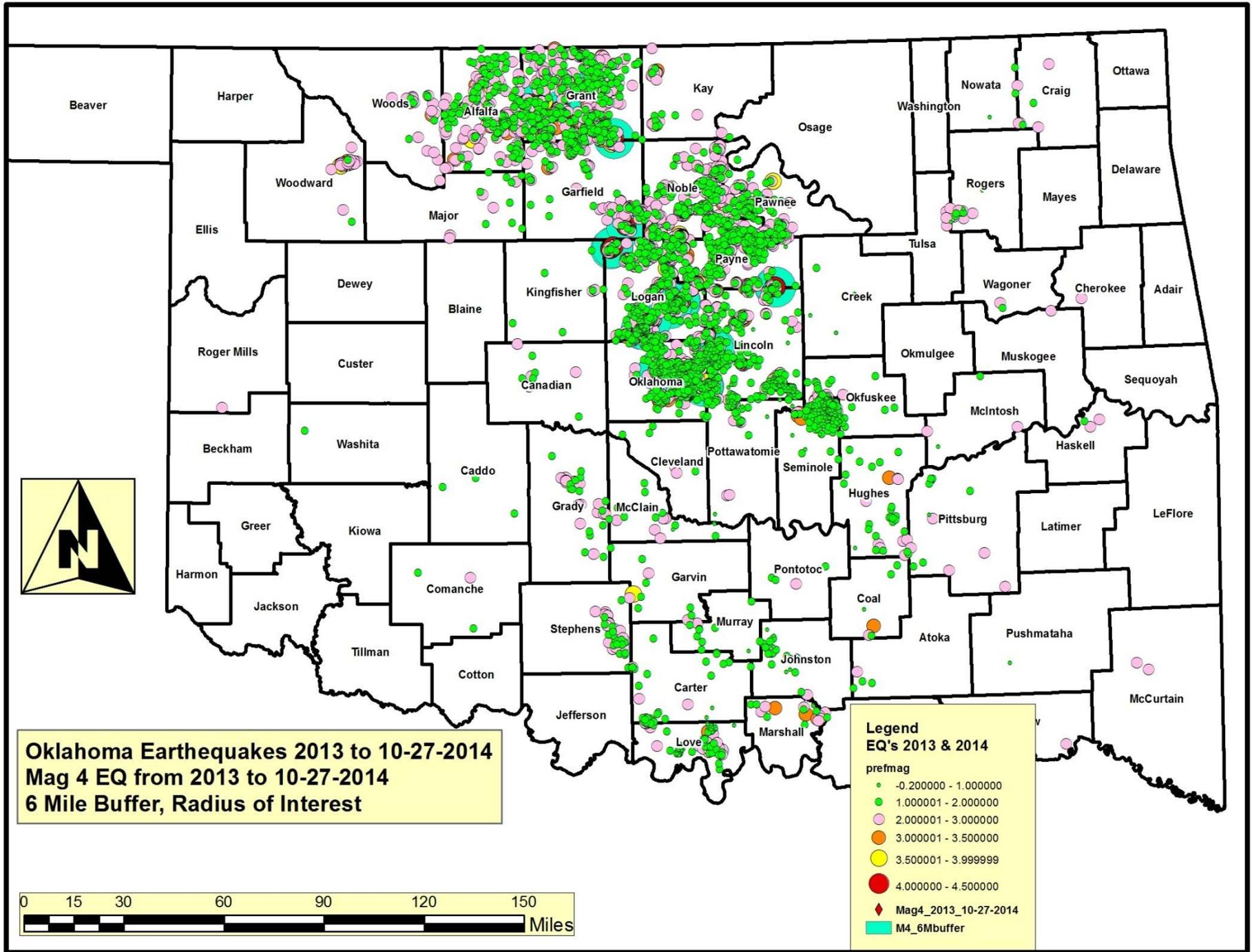
90% DOL; OFF WH, MED TO FINE XLN, SUCROSIC, SOFT TO BRITTLE, 10% WH CHRT

**CHERT/GRANITE WASH**

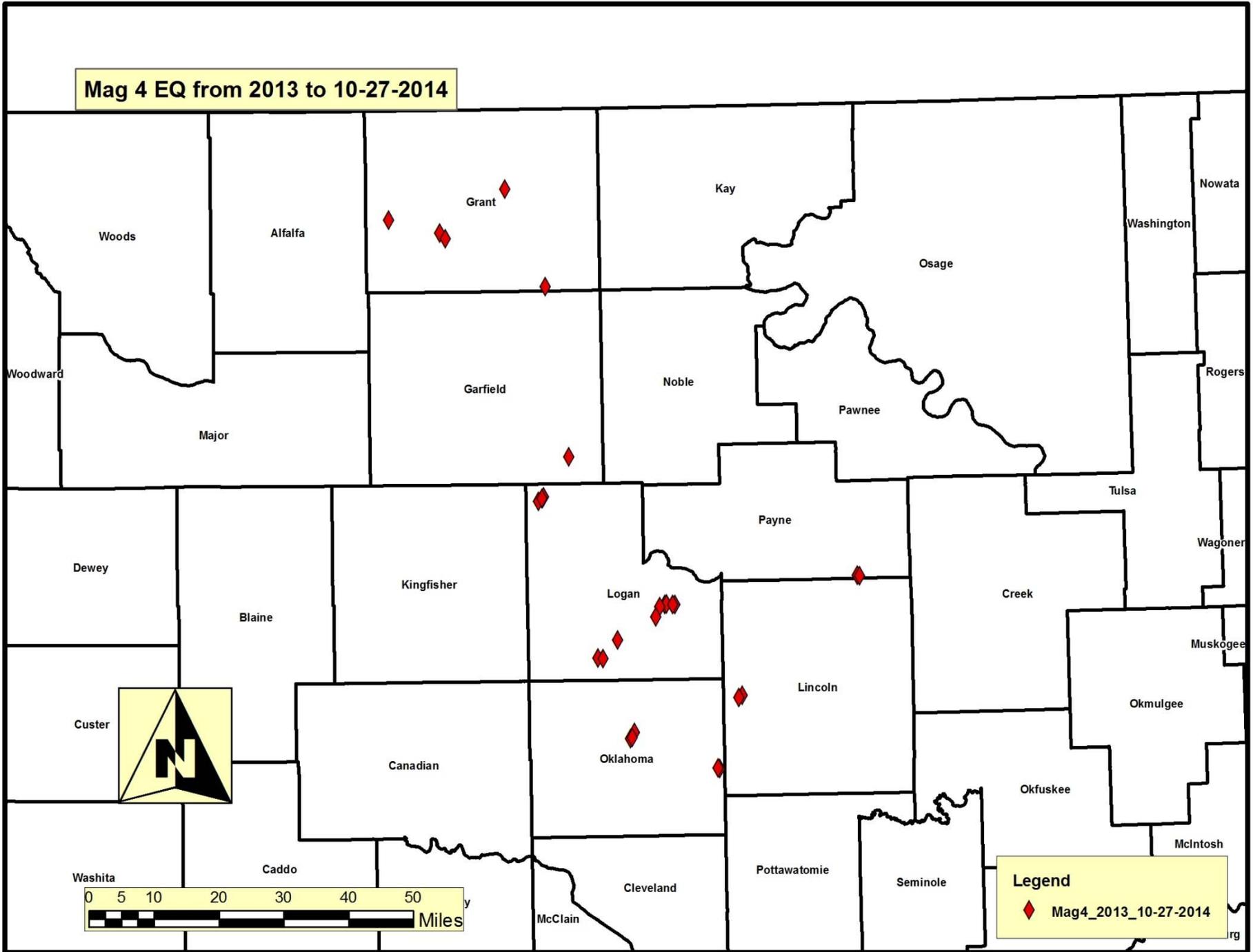
7,875' MD 7,875' TVD  
(-6,692' SS)

55% DOL; OFF WH TO BR

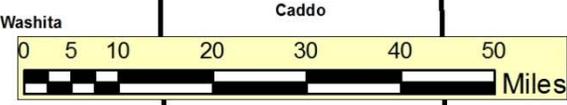




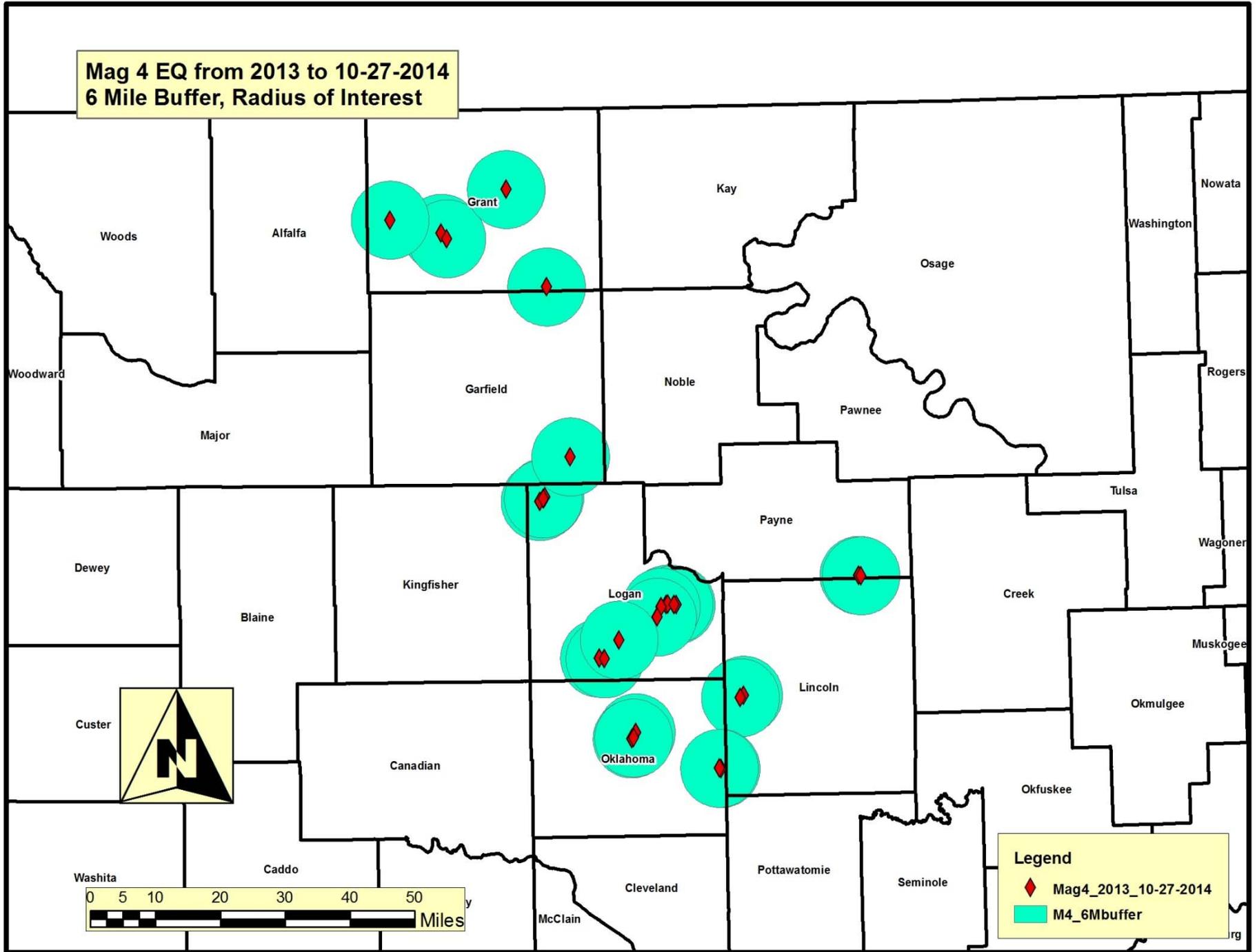
Mag 4 EQ from 2013 to 10-27-2014



**Legend**  
◆ Mag4\_2013\_10-27-2014



**Mag 4 EQ from 2013 to 10-27-2014  
6 Mile Buffer, Radius of Interest**

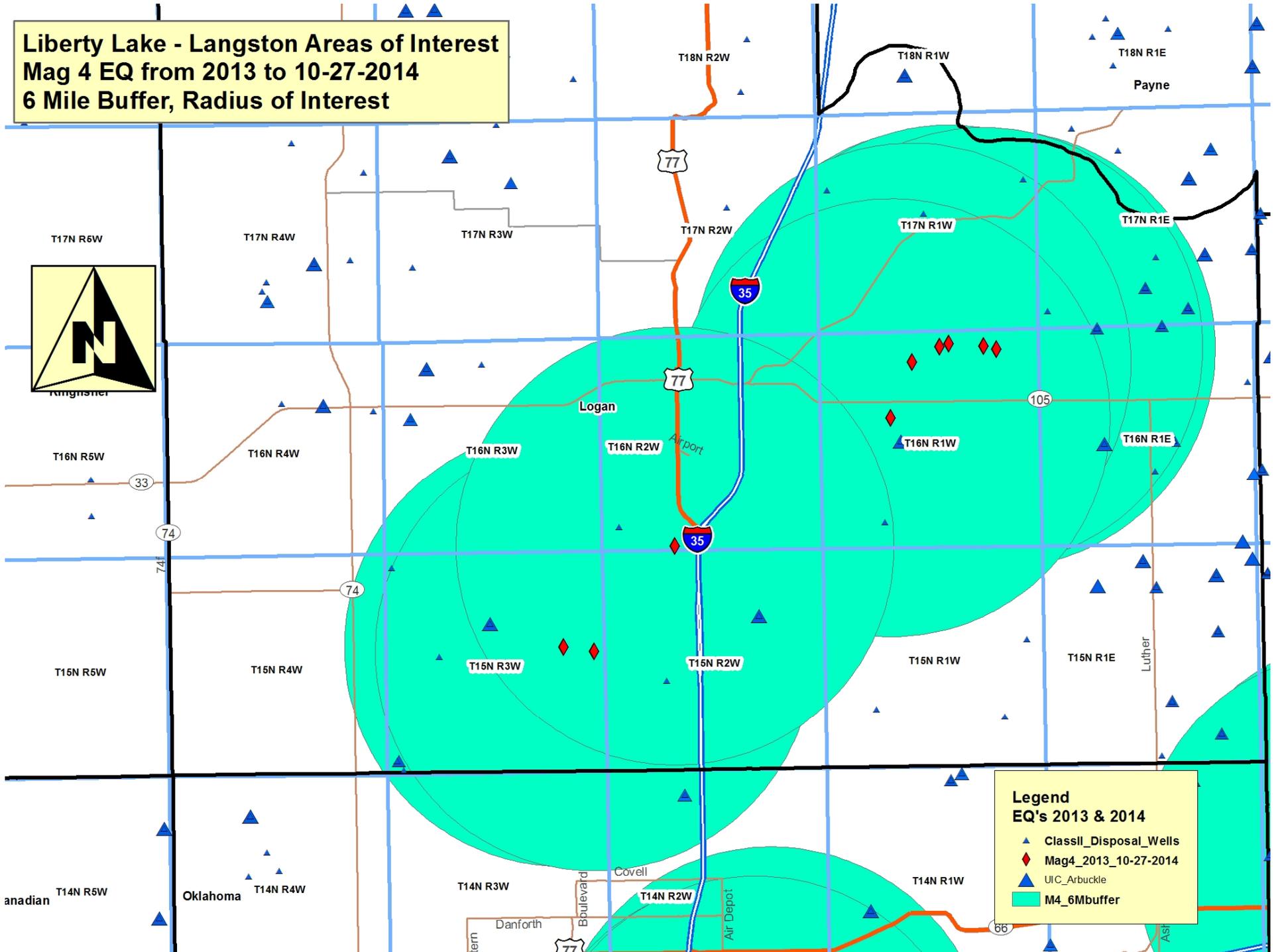


# Investigation of Area of Interest

1. Review all wells for **Arbuckle** disposal wells.
2. Examine all available data for wells **for high volumes** or in contact with the basement.
3. IF well is in contact with the **basement** require operator to shut in and plug back.
4. Review all UIC wells for **permit compliance** i.e. rates, pressures, geologic formation(s).
5. Require all operators to record **rates and pressures daily** and report weekly.
6. Forward all data to the **OGS - looking for CORRELATIONS**



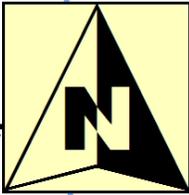
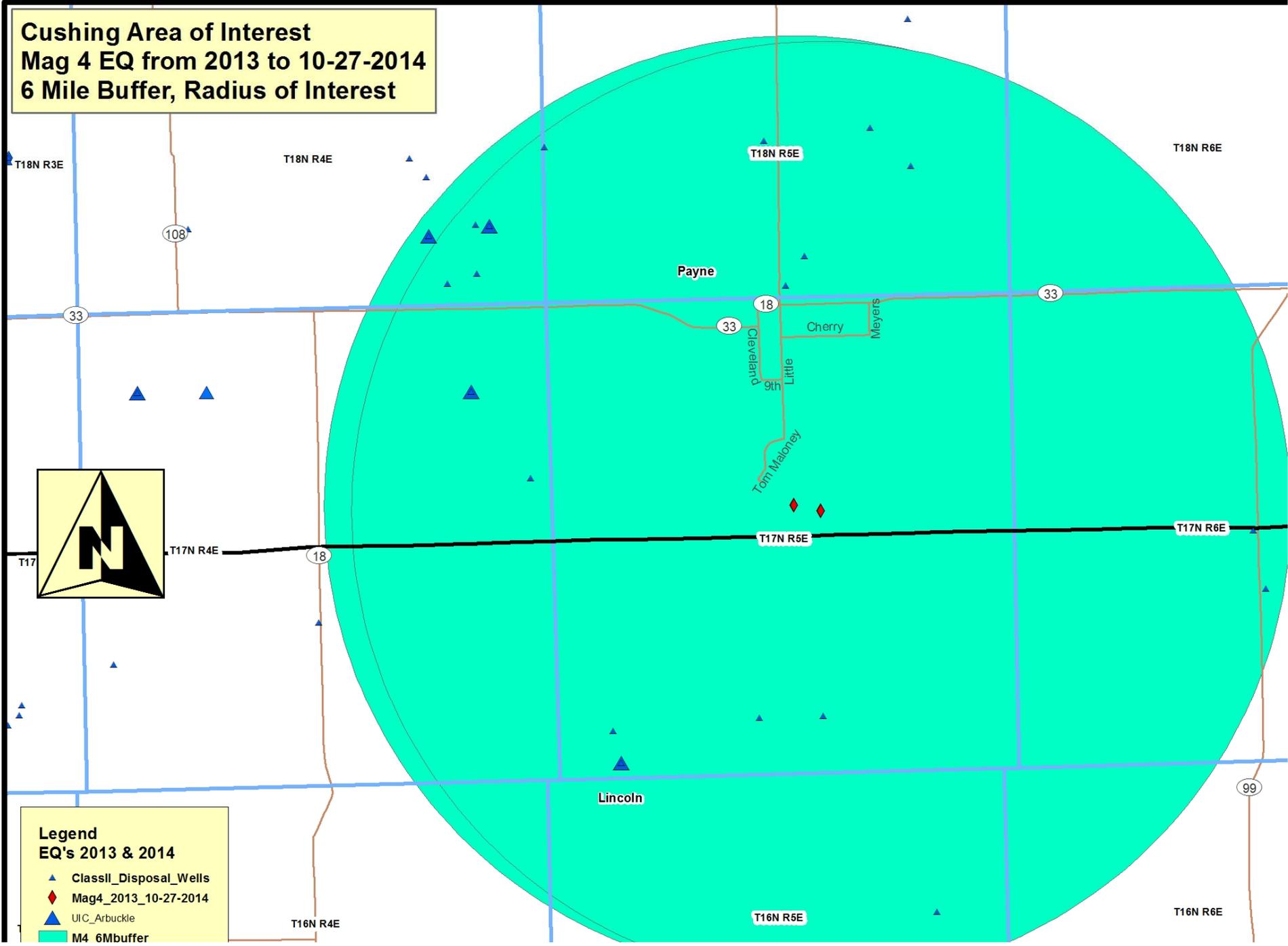
**Liberty Lake - Langston Areas of Interest  
Mag 4 EQ from 2013 to 10-27-2014  
6 Mile Buffer, Radius of Interest**



**Legend  
EQ's 2013 & 2014**

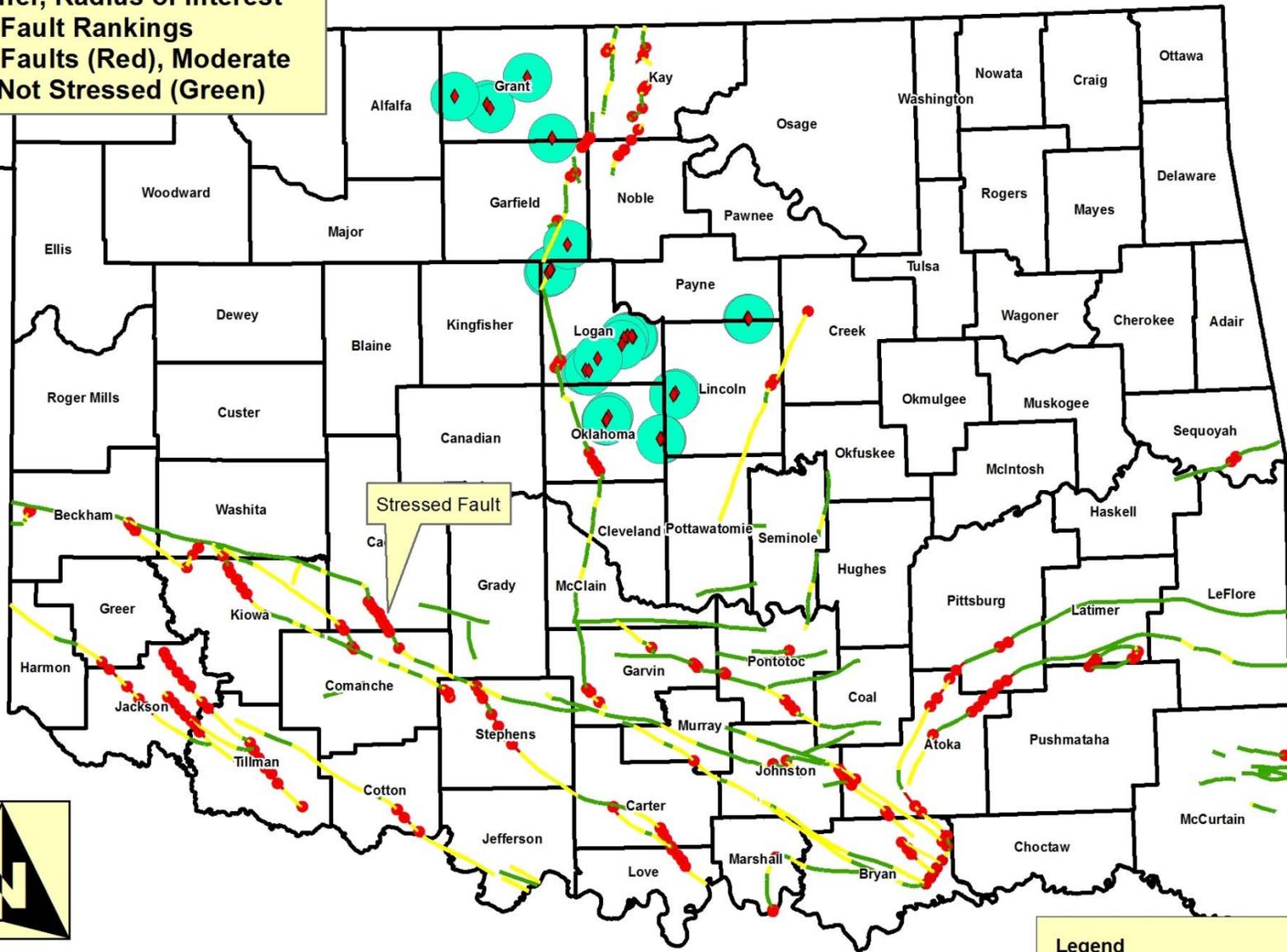
- ▲ ClassII\_Disposal\_Wells
- ◆ Mag4\_2013\_10-27-2014
- UIC\_Arbuckle
- M4\_6Mbuffer

**Cushing Area of Interest  
Mag 4 EQ from 2013 to 10-27-2014  
6 Mile Buffer, Radius of Interest**



- Legend**  
**EQ's 2013 & 2014**
- ▲ ClassII\_Disposal\_Wells
  - ◆ Mag4\_2013\_10-27-2014
  - ▲ UIC\_Arbuckle
  - M4\_6Mbuffer

Mag 4 EQ from 2013 to 10-27-2014  
6 Mile Buffer, Radius of Interest  
Stressed Fault Rankings  
Stressed Faults (Red), Moderate  
(Yellow), Not Stressed (Green)

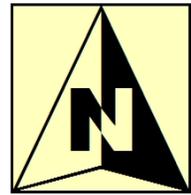
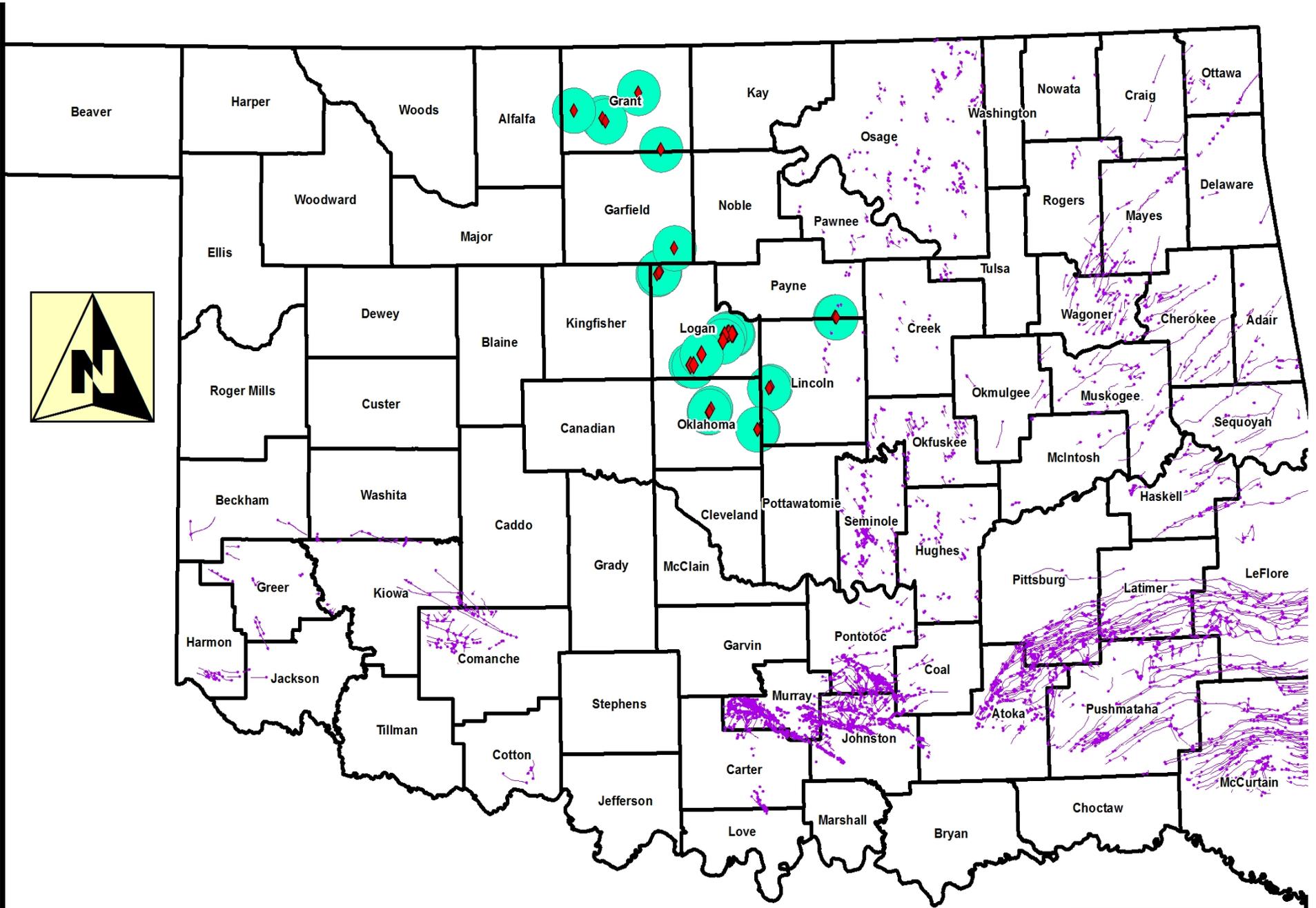


**Legend**

- ◆ Mag4\_2013\_10-27-2014
- M4\_6Mbuffer

# OCC Permitting Protocol

- 1. Check location of proposed well with permitting map.
- 2. If well location is within 3 miles of stress fault or within an area of interest ask operator for a technical meeting.
- 3. Ask operator to demonstrate level of risk of induced seismicity.(technical data)
- 4. Require application to go to public hearing before an Administrative Law Judge at the OCC.

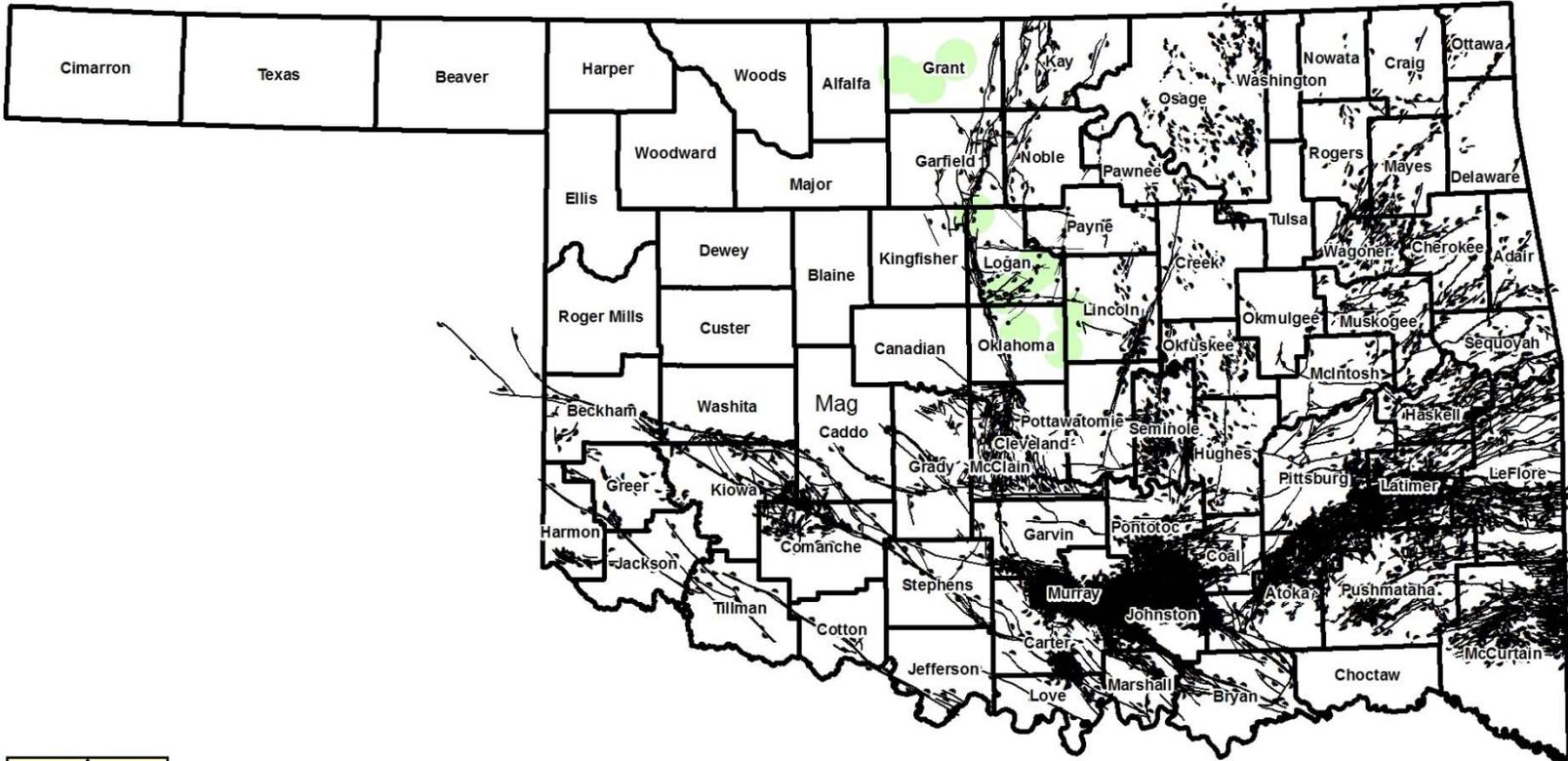


Mag 4 EQ from 2013 to 10-27-2014

Legend

◆ Mag4\_2013\_10-27-2014

6 Mile Radius Area of Concern  
OGS Faults After 3/2014



Date: 9/8/2014

**EQ 2013 to 9/8/2014**  
— OGS Faults After 3/2014  
Mag4\_6mile\_9/8/2014



# Oklahoma Corporation Commission

**Oil and Gas Conservation Division**

**Tim Baker, Director**